# NEWS REPORT

*National Academy of Sciences* *National Research Council*

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## Prevention of Deterioration


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THE Prevention of Deterioration Center is a consultative body on highly specialized technical problems, a scientific information-collecting and disseminating agency, and a research organization. The Center serves all agencies of National Defense concerned with combating the impairment of materials, components, and assemblies of equipment. Set up under an advisory committee of recognized authorities appointed by the Chairman of the National Research Council, the technical staff is composed of specialists so trained in the various branches of physical and biological science that together they may attack a given problem in team fashion.

An Advisory Committee composed of the following scientists assists the Center with the development of its research program: R. M. Burns, Bell Telephone Laboratories; L. V. Berkner, Associated Universities, Inc.; D. E. Green, University of Wisconsin; Milton Harris, Harris Research Laboratories; A. G. Norman, Chemical Corps, U. S. A.; K. V. Thimann, Harvard University; and H. H. Uhlig, Massachusetts Institute of Technology. The technical staff of the Center includes Glenn A. Greathouse, Director, Carl J. Wessel, Assistant Director, six consultants representing as many scientific fields, and eleven associates to carry on the important functions of the publications and library sections.

On problems of deterioration, the Center acts in an advisory capacity to the Defense Agencies and to other groups. The library staff collects, catalogs, and indexes pertinent technical data; the publications group summarizes the latest information and issues condensed reports; and the research branch pursues investigations on specific problems not treated adequately elsewhere.

The fact that material goods are unduly short-lived and subject to gross degradation by environmental elements has long been recognized. People today find themselves confronted with the problem of protecting from deterioration an incalculable amount of material essential to human welfare and happiness in a complex, industrial civilization. Either we attack the problem actively and as objectively as possible in the light of latest knowledge, or we resign ourselves to inexorable decay, an attitude inimical to our age of science and invention. Moth damage to fabrics in the United States alone now amounts to 100 million dollars annually and the yearly national cost of corrosion is estimated to be between five and six billion dollars. The over-all cost of deterioration of materials is approximately twelve billion dollars annually.

In addition to the losses resulting from deterioration, wasteful exploitation of national resources and the drain of two wars have dangerously depleted sources of raw materials. Lavish use of copper, zinc, and lead in the United States has so depleted supplies of these essential minerals that imports must now supplement domestic production. Concern over approaching exhaustion of iron ore in the Mesabi Range is being expressed constantly in current technical literature. Warnings are issued repeatedly that we must conserve the remaining forests. Thus in every way conservation is

becoming increasingly important to us all.

Only recently has it come to be appreciated that every deterioration problem may be explained in terms of clear-cut chemical, physical, and biological criteria. Intensive practical application of scientific principles to "Deterioration Prevention" is, indeed, a comparatively new development dating from the early years of World War II when deterioration of equipment became a serious problem for the Armed Forces. Operations in that conflict took place over wide areas and encountered for the first time in military history virtually all the extremes of climate. These circumstances led to deterioration of essential material at a rate and on a scale never before encountered by any of the belligerents. Equipment with a predictable life in terms of months or years in temperate climates became inoperable in a matter of weeks in the tropics. The seriousness of this attack on the materials that our Armed Forces expected to use in battle need not be further emphasized.

Fortunately, the gravity of the maintenance problem was quickly comprehended, and emergency programs were established to reduce materiel losses due to deteriorative factors. In the United States a Joint Army-Navy Deterioration Steering Committee was established under the National Defense Research Committee. With the necessary subcommittees, it set out to analyze the needs of the Armed Forces and to determine means of satisfying those needs. Simultaneously, the Tropical Deterioration Information Center was established under the Office of Scientific Research and Development, using the facilities of the George Washington University.

Through emergency recommendations, substantial improvements were effected by the combined efforts of these two coordinate groups. Protection against deteriorative agents was provided, admittedly sometimes short of ideal, without undue interference with rapid wartime production and transportation. By the close of the war the activities of the two groups had clearly demonstrated their broad national usefulness. In 1945, in a move toward the establishment of a more permanent organization, the wartime Steering Committee was abolished and its functions transferred to a Joint Army-Navy Deterioration Prevention Committee, and the group at George Washington University was reconstituted as the Prevention of Deterioration Center under the Division of Chemistry and Chemical Technology of the National Research Council. Thus, the present Center was established with the sponsorship and financial support of the Armed Forces.

Administratively, the arrangement is proving to be exceptionally effective. The National Research Council, recognizing the indispensable value of individual investigation, helps to integrate the work of individual scientists and to coordinate the attack upon broad problems in the field of scientific inquiry. The Center is of great service in connection with the solution of problems which demand close cooperation of several laboratories or many workers in various fields of science. In the problem of materiel deterioration, technical work draws upon all the basic sciences and upon their practical application.

In the course of years the Prevention of Deterioration Center has accumulated and coded over 15,000 reports on research and development problems on the deterioration of assembled equipment and on individual materials, such as wood, leather, plastics, metals, and fabrics, under varied conditions. Probably no other library in the world contains a more complete collection on the subject, and all documents are available for loan to authorized persons. Although there are in existence numerous texts on corrosion, wood decay, paint failure, and similar specific deterioration problems, there has been no published source of information on the behavior of materials under the influence of deteriorative factors. In an attempt to meet this need, the Center issues periodically *Prevention of Deterioration Abstracts*, in which the voluminous literature on deterioration is condensed and systematized. The abstract service now serves almost 500 subscribers in the Armed Forces, industry, and universities here and abroad. Over 2,000 pages of abstracts are issued annually.

As further aids the Center is preparing a *Handbook* of condensed technical data on deterioration, and a book entitled *Introduc-*

*tion to the Prevention of Deterioration of Materials.* Personnel from the Armed Forces and other experts in the field are collaborating in the preparation of these books. Both publications will contain extracts from the mass of available data and will attempt to provide a limited number of general principles on various aspects of the broad field of deterioration prevention.

In cooperation with the University of Maryland, the Center operates a scientific screening program for evaluating such compounds as fungicides and bactericides. This work involves procuring samples for test, searching the literature for available data, preparing file cards, indexing, distributing samples and otherwise coordinating an overall fungicide research project. Further work includes standardization of test methods, evaluation of results, correlation of chemical structure with fungicidal or bactericidal activity and suggestion of lines for further investigation. The files of the Center now contain detailed information on the fungicidity of some 7,800 compounds.

Although the experiences of our Armed Forces provide dramatic examples of deterioration of materiel, there are many other examples which are too often overlooked. Our industries pay heavily for deterioration, and although their problem is one of economics rather than survival, it is serious nevertheless. The individual faces the same problem, directly in the maintenance of his home, household goods, and automobile; indirectly, in the price of consumer goods, which includes the cost of deterioration in industry.

Extending man's span of life has been a major goal of scientists for many centuries. Oddly enough until recently, extending the period of usefulness of the materials of living has been given little attention. The Prevention of Deterioration Center aims to balance the books on these two aspects of human endeavor.

# Program for Mathematics

MARSTON MORSE
*Chairman, Division of Mathematics*

MATHEMATICS of the present day has greatly increased its contacts with the other sciences. This fact is reflected in the number and variety of scientific societies associated with the Division of Mathematics recently established by the National Research Council. The list includes the American Mathematical Society, Mathematical Association of America, Institute of Mathematical Statistics, American Physical Society, Eastern North American Region of the Biometric Society, Association for Symbolic Logic, and the Econometric Society. Representatives of these societies are members of the Division. In addition there are five members-at-large appointed by the Chairman of the National Research Council.

To facilitate coordination of government and non-government programs in the field of mathematics, officials of various governmental agencies have been invited to serve as liaison representatives in the new Division. It is hoped that these individuals will keep the Division informed of the needs of their respective agencies and thus help the mathematicians of the country to render prompt assistance whenever their services are required. At the present time the Division is serving in an advisory capacity to the Office of Naval Research and the Office of Air Research. It seems likely that this type of service will be extended to other governmental agencies and will form a major activity of the new Division.

Relations between the various governmental agencies and the Division of Mathematics will be the responsibility of a special liaison committee of the Division. Mem-

bership of this committee includes Marshall H. Stone, University of Chicago, *Chairman;* C. B. Allendoerfer, Haverford College; S. S. Cairns, University of Illinois; S. S. Wilks, Princeton University; B. O. Koopman, Columbia University. This committee is canvassing approximately one hundred mathematicians who have had experience in government work of a technical nature to ascertain their willingness to serve the Government in some scientific capacity.

Mathematicians of the National Research Council are taking an active part in the work of the Committee on Operations Research, sponsored jointly by the Divisions of Mathematics and Physical Sciences. The Chairman of this Committee is Horace Levinson, formerly Director of Research, L. Bamberger & Co. There is not sufficient space here to discuss fully the potentialities of Operations Research or the program of the Committee. It is sufficient to say that the mathematician senses an isomorphism between certain operations in submarine warfare, in bomb raid strategy and analysis, and even in types of industrial management. Those desiring to learn more about this Committee are invited to request a copy of *Operations Research with Special Reference to Non-Military Applications,* prepared by the Committee and listed under New Publications in this issue of NEWS REPORT.

There is today a distressing shortage of competently trained men in mathematics, both pure and applied. It is possible that the fellowship program proposed by the National Science Foundation, with its emphasis on predoctoral fellowships, may do much to reduce this shortage of personnel. Even more fundamental is the need for discovery and development of the scientific talent latent in the youth of this country. This need motivates the setting up of a new committee in the Division of Mathematics to be called the Committee on Regional Development of Mathematics which will determine as soon as possible which universities have mathematical staffs, student bodies, and scientific interest sufficient to warrant building a regional center based on that interest. When this question is answered, the Division will encourage the appropriate governmental agencies to participate in the desired regional development.

The research committees of the Division of Mathematics include a committee on High-Speed Calculating Machines with John von Neumann of the Institute for Advanced Study as Chairman. This committee plans to summarize what has already been accomplished in the design and perfection of high-speed calculating machines and to chart what may in all likelihood be achieved in the near future. The question of the establishment and nature of an International Computation Center under the United Nations is debated among mathematicians with much interest. It is generally hoped, however, that the International Union for Mathematics, which in all probability will be set up early in 1952, will actually come into being soon enough to assume its very important part in this debate.

In anticipation of the early creation of the new International Union, the Chairman of the Division of Mathematics has arranged for the nomination of a U. S. A. National Committee on Mathematics. This Committee will consist of nine representatives of mathematics, four nominated by ballot by the Division of Mathematics and five similarly nominated by the Policy Committee for Mathematics, composed of representatives from five mathematical societies. This U. S. A. National Committee will operate through the Divisions of Mathematics and International Relations and represent the National Research Council in its relations with the new Union. A formal request for United States adherence to the new Union will soon be made by the Department of State.

The Division of Mathematics is requested to advise the National Research Council on the selection of National Research Council Fellows in the mathematical sciences. The award of fellowships in science and contracts to individual scientists for the performance of research will be fully successful and satisfy the scientific community at large, only if there is a relatively complete understanding on the part of scientists of the nature and timing of the awards, and of the mode of selection of those who are

preferred. Recent experience shows that the mathematical community at large has not been broadly enough informed at a sufficiently early date to enable all the interested mathematicians to apply for awards in the proper way at the proper time. The Division of Mathematics proposes to remedy this situation, as far as mathematics is concerned, by sending out at an early date in the fall mimeographed circulars of information on how, when, and where to apply for the various major types of fellowships and contracts for research open to mathematicians.

Headquarters for the Division of Mathematics is located in the National Academy–Research Council Building in Washington. John R. Kline, Chairman of the Policy Committee for Mathematics, is the present Executive Secretary. After July 1, James A. Clarkson, Head of the Department of Mathematics of Tufts College, will take over these duties. Requests for information regarding the activities of the Division should be addressed to the Executive Secretary in Washington, or the Division Chairman, Institute for Advanced Study, Princeton, New Jersey.

# *SCIENCE NEWS*

### ROY W. CRUM

It is with deep regret that the editors of NEWS REPORT record the passing on May 13 of Roy W. Crum, for 24 years Director of the Highway Research Board of the NRC. Under Mr. Crum's able leadership the Board grew steadily in stature and greatly increased its services in the field of highway research and development. To Mr. Crum's associates in the NRC, his untiring efforts in the promotion and correlation of research in the field of highway engineering are well known. Others will find his achievements recorded in the numerous and comprehensive publications which came from the Board under his leadership and the many valuable meetings which he planned and carried through so successfully.

One of Roy W. Crum's last articles on the work of the Board appeared in the January–February issue of NEWS REPORT and was entitled "The Highway Research Board Celebrates Its Thirtieth Anniversary." The program recorded in that article stands as a tribute to the man who created it.

### SCIENCE ADVISORY COMMITTEE

President Truman recently appointed a Science Advisory Committee of the Office of Defense Mobilization to advise him and Charles E. Wilson, Director of Defense Mobilization, on plans for implementing scientific research for defense and on other matters involving the application of science to the national defense effort. Members of this Committee are: Oliver E. Buckley, Bell Telephone Laboratories, *Chairman;* Detlev W. Bronk as President of the National Academy of Sciences; William Webster as Chairman of the Research and Development Board; Alan T. Waterman as Director of the National Science Foundation; Hugh L. Dryden, representing the Interdepartmental Committee on Scientific Research and Development; and James B. Conant, Lee A. DuBridge, James R. Killian, J. Robert Oppenheimer, and Charles A. Thomas.

### CONFERENCE BOARD OF ASSOCIATED RESEARCH COUNCILS

Gordon T. Bowles, Executive Secretary of the Conference Board since its establishment three and one-half years ago, will soon resign his post to accept appointment as visiting lecturer at Tokyo University. In addition to his teaching duties at the University, Dr. Bowles will continue research in Anthropology. The visiting lectureship is sponsored jointly by Tokyo University and the Supreme Command for the Allied Powers.

Francis A. Young, Deputy Executive Secretary of the Conference Board for the past two years, will become Executive Secretary upon Dr. Bowles' departure for Japan, tentatively scheduled for mid-July.

## ANNUAL MEETING NATIONAL ACADEMY OF SCIENCES

The National Academy of Sciences at its Annual Meeting held in Washington, April 23, 24, and 25, elected a new Home Secretary, two members of the Council of the Academy, twenty-nine members, and three foreign associates.

Alexander Wetmore, Secretary of the Smithsonian Institution, was elected Home Secretary for a 4-year term beginning July 1, 1951 succeeding Fred. E. Wright, formerly of the Carnegie Institution of Washington, who has served in that capacity for the past twenty years.

J. W. Beams, Chairman of the School of Physics, University of Virginia, and E. C. Stakman, Chief of the Division of Plant Pathology and Botany, University of Minnesota, were elected to membership on the Council of the Academy to serve until June 30, 1954. Additional members of the Council of the Academy are Roger Adams, Detlev W. Bronk, Oliver E. Buckley, Ernest W. Goodpasture, Joel H. Hildebrand, Walter S. Hunter, William J. Robbins, Alexander Wetmore, and Edwin B. Wilson.

**Newly Elected Members of the Academy**

W. C. Allee, Head of Department of Biology, University of Florida
Norris E. Bradbury, Director of Los Alamos Scientific Laboratory
Dirk Brouwer, Director of Yale Observatory
Roy E. Clausen, Chairman of Division of Genetics, University of California, Berkeley
E. DeGolyer, Senior Partner of DeGolyer and MacNaughton, Dallas
John T. Edsall, Associate Professor of Biological Chemistry, Harvard Medical School
Raymond M. Fuoss, Sterling Professor of Chemistry, Yale University
Ross Gunn, Director of Division of Physical Research, U. S. Weather Bureau, Washington, D. C.
Harry F. Harlow, Chairman of Department of Psychology, University of Wisconsin
Columbus O'D. Iselin, Senior Physical Oceanographer, Woods Hole Oceanographic Institution, Woods Hole, Mass.
Remington Kellogg, Director of U. S. National Museum, Washington, D. C.
Robert H. Kent, Associate Director of Ballistic Research Laboratories, Aberdeen Proving Ground, Md.
Donald William Kerst, Professor of Physics, University of Illinois
Charles G. King, Director of Nutrition Foundation, New York City
S. K. Lothrop, Curator of Andean Archeology at Peabody Museum, Harvard University
Thomas B. Nolan, Assistant Director of U. S. Geological Survey, Washington, D. C.
E. M. Purcell, Professor of Physics, Harvard University
A. J. Riker, Professor of Plant Pathology, University of Wisconsin
H. P. Robertson, Professor of Mathematical Physics, California Institute of Technology
Frederick D. Rossini, Chairman of Department of Chemistry, Carnegie Institute of Technology
Albert B. Sabin, Professor of Research Pediatrics, Children's Hospital Research Foundation, Cincinnati
Franz Schrader, Head of Department of Zoology, Columbia University
Frederick Seitz, Research Professor of Physics, University of Illinois
William Shockley, Research Physicist, Bell Telephone Laboratories
Thomas G. Thompson, Director of Oceanographic Laboratories, University of Washington
William S. Tillett, Head of Department of Medicine, New York University College of Medicine
G. T. Whyburn, Chairman of Department of Mathematics, University of Virginia
Carl J. Wiggers, Professor of Physiology, Western Reserve University School of Medicine
W. G. Young, Dean of Division of Physical Science, University of California at Los Angeles

**Foreign Associates**

Pentti Eskola, Professor of Geology and Mineralogy, Helsinki University
Sir Godfrey Thomson, Professor of Education, Edinburgh University
Karl von Frisch, Director of the Zoological Institute, University of Munich

Among the highlights of the Annual Meeting of the Academy, at which forty-eight scientific papers were communicated, were a public lecture at the Academy on "The Palomar Observatory" by Ira Sprague Bowen, Director of Mt. Wilson and Palomar Observatories; an informal address by C. J. Mackenzie, President of the National Research Council of Canada, delivered at the Annual Dinner for members, wives, and guests of the Academy; and the award of the Daniel Giraud Elliot Medal to John Thomas Patterson, Director of Zoological Research, University of Texas. Preceding the address by Dr. Mackenzie, Fred. E. Wright, retiring Home Secretary of the Academy, spoke briefly, and President Bronk paid tribute to Arthur Louis Day, who was elected a member of the Academy forty years ago.

On the last day of the Annual Meeting a special session was held at the National

Bureau of Standards in honor of the Fiftieth Anniversary of the founding of the Bureau. Dr. Condon, Director of the Bureau, and Mrs. Condon entertained the members and their wives at tea.

At the invitation of President Bronk fifty members of the Academy attended a buffet supper in the Hall of the Academy following the close of the Annual Meeting. On this occasion the Academy members discussed governmental policies affecting science and the role of the Academy in the present international crisis.

### RESOLUTION ON THE SCIENTIFIC PERSONNEL PROBLEM

At the Annual Meeting of the Academy, President Bronk announced the appointment of a Committee on Scientific Personnel in the Armed Forces, consisting of F. Wheeler Loomis, University of Illinois, *Chairman;* Leonard Carmichael, Tufts College; Robert F. Loeb, Columbia University College of Physicians and Surgeons; J. S. Nicholas, Yale University; William W. Rubey, U. S. Geological Survey; Charles Allen Thomas, Monsanto Chemical Company; and M. A. Tuve, Carnegie Institution of Washington.

Academy members in business session adopted the following resolution proposed by the Chairman of the new Committee:

WHEREAS, the National Academy of Sciences in its Annual Meeting recognizes that *a*) scientific and technically trained manpower constitutes an important national resource in critically short supply, and that therefore such scientific manpower must be distributed judiciously among those activities in which trained men can make their most effective contributions to the strength of the Nation; and that *b*) the strength of the United States in the days ahead may well depend upon the maintenance of a continuous flow of well-trained scientists and engineers from colleges and universities, wherefore it is necessary, as evidenced by certain provisions of the recent Executive Order implemented by the Selective Service System, to defer suitably qualified students for later military assignment or other required national service;

*Be it therefore resolved,* That the National Academy of Sciences recommends the establishment of a National Scientific Personnel Board, including men of recognized scientific and technical standing, in the Office of Defense Mobilization, in appropriate relationship with the National Science Foundation and the Selective Service, to study intensively the problems relating to the utilization of professional scientific and technical manpower, to accept responsibilities for formulating appropriate policies, and to advise the Department of Defense and other interested Government agencies and civilian groups on these problems of specialized manpower.

### COMMITTEE ON SCIENTIFIC CONFERENCES

In recent years the National Academy of Sciences has sponsored a number of conferences on special problems or subjects involving small groups of individuals working in restricted fields. To consider Academy policy relative to this area of activity, President Bronk has appointed a Committee on Scientific Conferences. Duncan A. MacInnes, Rockefeller Institute for Medical Research, will be Chairman of the Committee. Other members include Michael Heidelberger, Columbia University College of Physicians and Surgeons; John G. Kirkwood, California Institute of Technology; J. R. Oppenheimer, Institute for Advanced Study; Louis B. Slichter, University of California at Los Angeles; and L. J. Stadler, University of Missouri.

### ANNUAL MEETING DIVISION OF BIOLOGY AND AGRICULTURE

The annual meeting of the Division of Biology and Agriculture of the NRC was held in Washington on May 15. Representatives of 31 Societies affiliated with the Division were present. The following fields were represented: anatomy, entomology, dairy science, genetics, nutrition, physiology, phytopathology, agronomy, animal production, biological chemistry, ichthyology, herpetology, limnology, oceanography, parasitology, veterinary science, botany, ecology, mycology, poultry science, forestry, soil science, and wildlife.

### FOOD AND NUTRITION BOARD

#### Spring Meeting

The spring meeting of the Food and Nutrition Board of the Division of Biology and Agriculture, held in Washington May 4 and 5, was attended by 20 of the 24 members and approximately 40 liaison representatives, committee members, and guests. In addition to reports from twelve standing committees, the Board moved to activate three new committees and heard reports

from representatives of FAO and WHO of the United Nations.

At a dinner meeting, Robert R. Williams, Research Corporation, New York City, spoke on his recent round-the-world mission on behalf of rice enrichment. This was also an occasion for tribute to Frank G. Boudreau who is retiring as Chairman of the Board. A brochure, presented to Dr. Boudreau with the signatures of Board members, carried the following inscription:

To Dr. Frank George Boudreau, from the members of the Food and Nutrition Board on the occasion of the tenth year of his chairmanship, in recognition of his genius in guiding to the fullest measure of achievement all those privileged to come within the compass of his inspirational leadership.

Leonard A. Maynard, Director of the School of Nutrition, Cornell University, has been appointed to succeed Dr. Boudreau as Chairman of the Board.

### NEW COMMITTEES

#### Conservation of Replaceable Resources

A Committee on Conservation of Replaceable Resources has been established by the Division of Biology and Agriculture with the following membership: Paul Sears, Yale University, *Chairman;* Stanley Cain, University of Michigan; Harold J. Coolidge, Pacific Science Board, NRC; Robert C. Cook, Managing Editor, *Journal of Heredity;* Ira Gabrielson, Wildlife Management Institute; E. H. Graham, U. S. Department of Agriculture; Herbert C. Hanson, Catholic University; George R. Phillips, U. S. Department of Agriculture; and Theodore W. Schultz, University of Chicago.

#### Developmental Biology

The Division of Biology and Agriculture has established a Committee on Developmental Biology under the Chairmanship of Paul Weiss, Professor of Zoology at the University of Chicago. Members of the Committee are: I. C. Gunsalus, University of Illinois; T. C. Byerly, U. S. Department of Agriculture; William W. Greulich, Stanford University; T. M. Sonneborn, Indiana University; K. V. Thimann, Harvard University; and B. H. Willier, Johns Hopkins University.

In the regrouping of the biological sciences currently taking place, a major area of research and instruction emerges that is concerned with the problems of development and growth in the widest sense. It will be the function of this Committee to survey the status of the field with particular reference to gaps, inadequacies and inconsistencies of present knowledge, to assist in the clarification and unification of concepts, terms and units of measurement, and to provide advisory services.

### ANNUAL MEETING DIVISION OF PHYSICAL SCIENCES

The annual meeting of the Division of Physical Sciences was held in Washington, on May 19. Representatives of seven Societies affiliated with the Division were present. With the establishment of a separate Division of Mathematics which took place in February of this year, it was believed appropriate and desirable to make certain changes in the framework of the membership of the Division of Physical Sciences. Changes approved at this meeting increased the representation from Government agencies and added representation from appropriate sections of the National Academy of Sciences.

### THERMAL BURNS

At the request of the Office of Naval Research the NRC has established an Advisory Group on Thermal Burns. Its members are: Isaac Starr, University of Pennsylvania Hospital, *Chairman;* Captain C. W. Shilling, MC, USN, O. E. Reynolds, and F. H. Quimby of the Office of Naval Research; J. L. Lilienthal, Jr., Johns Hopkins University; A. R. Moritz, Western Reserve University; K. C. Blanchard, Johns Hopkins University; and E. I. Evans, Medical College of Virginia. The Advisory Group already has held one meeting to review research proposals on thermal burns.

### CHEMICAL-BIOLOGICAL COORDINATION CENTER

The following individuals have been appointed members of the Steering Committee of the Chemical-Biological Coordination Center: McKeen Cattell, Cornell University Medical College, *Chairman;* R. L. Beard, Connecticut Agricultural Experiment Station; David R. Goddard, University of Pennsylvania; A. M. Harvey, Johns Hopkins University; and M. H. Seevers, University of Michigan Medical School.

# SCIENTIFIC PERSONNEL

## FULBRIGHT AWARDS

As one of the four member organizations of the Conference Board of Associated Research Councils, the NRC shares responsibility with the Social Science Research Council, the American Council on Education, and the American Council of Learned Societies for recommending candidates for awards for university lecturing and postdoctoral research abroad under the Fulbright program. Final selection of all candidates is made by the Board of Foreign Scholarships, composed of ten leading educators and educational administrators appointed by the President.

Over 300 travel and maintenance awards to American scholars and a like number of travel awards to foreign scholars are offered annually. Many grants are available to specialists in the natural sciences.

Authorized by Public Law 584, the Fulbright program is designed to further goodwill and understanding between the United States and other countries through the exchange of students, lecturers, research scholars, and specialists. Funds are derived from foreign credits acquired by the United States from the sale of surplus properties left in the 19 participating countries at the close of the war.

Beginning in the spring of 1951 with the competition for advanced category awards for 1952–53, the Conference Board Committee on International Exchange of Persons is conducting two separate competitions each year, one for East Asian and Pacific countries where, as a rule, the academic year begins in the spring or early summer, and one for European and Near Eastern countries with the academic year commencing in the fall.

The period for submitting applications for East Asia and the Pacific is between March 1 and April 15 of the year preceding that for which application is made. The countries concerned are: Australia, New Zealand, the Philippines, Thailand, Burma, India, and Pakistan.

The period for making application for Europe and the Near East is between June 15 and October 15 for the academic year beginning in the fall of the next year. Participating countries are: The United Kingdom and the United Kingdom Colonial Dependencies, France, Italy, Greece, Belgium and Luxembourg, Netherlands, Norway, Austria, Turkey, Egypt, and Iran.

In practice all forms of instruction, as well as research, are considered within the scope of the program, but tours of inspection and observation are not. Awards are usually issued for a full academic year and are for use in one country only.

Foreign scholars may receive travel awards under the program, but because of the limitation of funds to foreign currencies, other arrangements must be made for their support within the United States. The Conference Board Committee is endeavoring to publicize to universities, colleges and research organizations the availability of such persons, and to arrange institutional attachment and support for them in the United States. Foreign scholars with assured support here may apply to the U. S. Educational Foundations or Commissions in their respective countries for consideration for travel awards.

Inquiries about the availability of foreign scholars, requests for information on awards for Americans under the program, and for application forms should be directed to the Executive Secretary, Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C.

## FELLOWSHIPS IN CANCER RESEARCH

Upon the recommendation of the Committee on Growth of the Division of Medical Sciences, NRC, the American Cancer Society has awarded 28 American Cancer Society Fellowships, 2 British American Exchange Fellowships, 31 Damon Runyon Clinical Research Fellowships, and 18 Damon Runyon Senior Clinical Research

Fellowships. Including fellowships previously announced, a total of 108 fellowships have been awarded this year by the Society. These awards involve an expenditure of more than $480,000 to enable young investigators to obtain training in cancer research in 68 institutions in 15 states, the District of Columbia, and 5 foreign countries.

## FELLOWSHIP APPOINTEES

The fellowship awards supported by the Rockefeller Foundation, Merck and Company, Inc., and the Radio Corporation of America have been accepted by the appointees. The following list indicates the institution from which the recipient received his degree as well as the nature and location of his fellowship research:

### Fellows in the Natural Sciences

Benjamin, Richard K. (Ph.D., University of Illinois, 1951)
The Laboulbeniales—Harvard University, with W. H. Weston.

Bloom, Barry M. (Ph.D., Massachusetts Institute of Technology, 1951)
Synthetic approaches to structures related to the steroids—University of Wisconsin, with W. S. Johnson.

Downs, Theodore (Ph.D., University of California, 1951)
Evolution in Merychippus with particular emphasis on species in the Great Basin and Pacific Coast Provinces—American Museum of Natural History, with G. G. Simpson.

Klee, Victor L. (Ph.D., University of Virginia, 1949)
Topology of infinite-dimensional linear spaces, convex sets in linear spaces, and other topics in function analysis—Institute for Advanced Study, with J. von Neumann.

McConnell, Harden M. (Renewal appointment; Ph.D., California Institute of Technology, 1950)
Electronic spectra and structure of molecules—University of Chicago, with R. S. Mulliken.

McCoy, Layton L. (Ph.D., University of Washington, 1951)
Synthesis of resin acids and related compounds —Massachusetts Institute of Technology, with Arthur C. Cope.

Nirenberg, Louis (Ph.D., New York University, 1949)
Problems of differential geometry in the large and non-linear partial differential equations in connection with methods of functional analysis —Swiss Federal Institute of Technology, Zurich, with Heinz Hopf.

Rosenlicht, Maxwell A. (Renewal appointment; Ph.D., Harvard University, 1950)
Algebraic geometry—Princeton University, with S. Lefschetz.

Savedoff, Malcolm P. (Ph.D., Princeton University, 1951)
Pulsating stellar atmospheres—Mt. Wilson and Palomar Observatories, with Jesse L. Greenstein.

Wightman, Arthur S. (Ph.D., Princeton University, 1949)
Divergence difficulties in the quantum theory of wave fields—Institute for Theoretical Physics, Copenhagen, with Niels Bohr.

Yennie, Donald R. (Ph.D., Columbia University, 1951)
Theory of elementary particles—Institute for Advanced Study, with J. R. Oppenheimer.

Yocum, Conrad S. (Ph.D., Stanford University, 1951)
Geotropism in plants—Harvard University, with Kenneth V. Thimann.

Zelitch, Israel (Ph.D., University of Wisconsin, 1951)
Enzymes connected with photosynthesis—New York University Medical College, with Severo Ochoa.

### Merck Postdoctoral Fellows in Natural Sciences

Atchley, William A. (Renewal appointment; M.D., Harvard Medical School, 1946)
Investigation of chemical basis for biological specificity of nucleic acids of very high molecular weight—Rockefeller Institute for Medical Research, with Rollin D. Hotchkiss.

Bogorad, Lawrence (Ph.D., University of Chicago, 1949)
Isolation and characterization of intermediates in synthesis of protoporphyrin using Chlorella mutants—The Rockefeller Institute for Medical Research, with S. Granick.

Clayton, Roderick K. (Ph.D., California Institute of Technology, 1951)
Investigation of certain aspects of phototaxis of Rhodospirillum Rubrum—Hopkins Marine Station, with C. B. Van Niel.

Cohn, Melvin (2nd renewal appointment; Ph.D., New York University, 1949)
Investigations in enzymatic adaptation—Pasteur Institute, Paris, with Jacques Monod.

Hubbard, Ruth (Ph.D., Radcliffe College, 1950)
Interaction of proteins with their prosthetic groups and their stabilization by these groups—Carlsberg Laboratory, Copenhagen, with K. Linderstrøm-Lang.

Jagendorf, André T. (Ph.D., Yale University, 1951)
A study of cytoplasmic proteins of tobacco leaves under "starvation" conditions—University of California, with S. G. Wildman.

Roeske, Roger (Ph.D., University of Illinois, 1951)
Isolation and structure elucidation of the constituents of *Sarcocephallus*—Swiss Federal Institute of Technology, Zurich, with V. Prelog.

Thayer, Philip S. (Ph.D., California Institute of Technology, 1951)
A study of mechanisms involved in formation of "adaptive enzymes"—University of California, with Roger Y. Stanier.

Watson, James D. (renewal appointment; Ph.D., University of Indiana, 1950)
Relationship between nucleic acid synthesis and bacteriophage reproduction—Institute for Cytophysiology, Copenhagen, with Herman M. Kalckar.

**RCA Predoctoral Fellows in Electronics**

Barnes, Casper W. (M.A., University of Florida, 1951)
Studies of space-charge-wave phenomena—University of Florida, with W. W. Harman.

Keiser, Bernard E. (M.S., Washington University, 1951)
Electronic means for improvement of signal-to-noise ratio in transmission of information—Washington University, with D. F. Winter.

Meeker, John G. (Renewal appointment; Ph.D., University of Michigan, 1951)
A large signal (theory) traveling wave tube—University of Michigan, with W. G. Dow.

Stein, Seymour (M.S., Harvard University, 1950)
Electrodynamics—Harvard University, with R. W. King.

Wachowsky, Hilliard M. (renewal appointment; Ph.D., Northwestern University, 1951)
Microwaves and antennas—Northwestern University, with Robert E. Beam.

Wade, Glen (M.S., University of Utah, 1949)
Noise in traveling wave tubes—Stanford University, with L. M. Field.

Warfield, John N. (B.S.E.E., University of Missouri, 1949)
Synthesis of variable networks using feedback—Purdue University, with R. P. Siskind.

# *INTERNATIONAL RELATIONS*

## UNESCO GENERAL CONFERENCE

Elvin C. Stakman, Chief, Division of Plant Pathology and Botany, University of Minnesota, will serve as one of the five Principal Representatives of the United States to the Sixth Session of the General Conference of UNESCO to be held in Paris, June 18–July 10. Dr. Stakman is a member of the National Academy of Sciences and an active participant in the work of the Division of International Relations, NRC. He is Chairman of the Executive Committee of the AAAS and past president of the organization. Other Principal Representatives to the UNESCO Conference are: Howland H. Sargeant, Deputy Assistant Secretary of State for Public Affairs, Chairman of the delegation; George D. Stoddard, President, University of Illinois; Mrs. Henry P. Russell, Vice-Chairman, U. S. National Commission for UNESCO; and George F. Zook, President, American Council on Education.

## INTERNATIONAL BERLIN WEEK FOR NATURAL SCIENCES

Joel H. Hildebrand, Dean of the College of Chemistry, University of California, represented the National Academy of Sciences at the International Berlin Week for the Natural Sciences held in Berlin, Germany, May 24–30. Dr. Hildebrand spoke on the "Theory of Nonelectrolytic Solutions."

The program for Berlin Week was organized by the Technical University, Berlin-Charlottenburg and the Free University, Berlin. J. D'Ans of the Society of German Chemists was in charge of arrangements.

## SCIENTIFIC UNIONS

### I U Cr

The following scientists will represent the NRC at the Second General Assembly of the International Union of Crystallography in Stockholm, June 27–July 3: R. W. G. Wyckoff, National Institutes of Health; A. L. Patterson, Institute for Cancer Research; L. O. Brockway, University of Michigan; Isidor Fankuchen, Polytechnic Institute of Brooklyn; W. H. Zachariasen, University of Chicago; David Harker, Polytechnic Institute of Brooklyn; Raymond Pepinsky, Pennsylvania State College; Edward W. Hughes, California Institute of Technology; J. D. H. Donnay, Johns Hopkins University; Elizabeth A. Wood, Bell Telephone Laboratories; Charles S. Barrett, University of Chicago; M. J. Buerger, Massachusetts Institute of Technology; P. P. Ewald, Polytechnic Institute of Brooklyn; Clifford Frondel, Harvard University; John S. Kasper, General Electric Company;

William N. Lipscomb, University of Minnesota; Rose C. L. Mooney, Tulane University; Dan McLachlan, Jr., University of Utah; Adolf Pabst, University of California; Robert E. Rundle, Iowa State College; and Clifford G. Shull, Oak Ridge National Laboratory.

The official U. S. delegation to the General Assembly is appointed by the Department of State. This delegation is composed of the first five NRC representatives listed above. Dr. Wyckoff has been designated chief delegate and chairman of the delegation.

### IUPAP

The U.S.A. National Committee of the International Union of Pure and Applied Physics met in Washington, D. C., on April 28. Those planning to attend the VIIth General Assembly of the Union in Copenhagen, July 11–14, were present. The group also included several United States members of commissions of IUPAP and of joint commissions of the International Council of Scientific Unions. A constitution specifying the manner of selection of members on the U.S.A. National Committee and defining the responsibilities and duties of the Committee was adopted and referred to the National Research Council for approval. Guests at the meeting included Joseph B. Koepfli, Science Adviser in the Department of State, and Wallace W. Atwood, Jr., Executive Secretary of the Division of International Relations, NRC.

The following scientists will represent the NRC at the VIIth General Assembly: Henry A. Barton, American Institute of Physics; Karl K. Darrow, Bell Telephone Laboratories; David M. Dennison, University of Michigan; Ugo Fano, National Bureau of Standards; W. H. Furry, Harvard University; Frank C. Hoyt, Los Alamos Scientific Laboratory; Elmer Hutchisson, Case Institute of Technology; Julian K. Knipp and L. Jackson Laslett, Iowa State College; Thomas Lauritsen, California Institute of Technology; R. B. Lindsay, Brown University; Harald H. Nielsen, Ohio State University; J. Rud Nielsen, University of Oklahoma; Robert L. Platzman, Purdue University; Milton S. Plesset, California Institute of Technology; M. L. Pool, Ohio State University; Bruno Rossi and John C. Slater, Massachusetts Institute of Technology; Louis A. Turner, Argonne National Laboratory; Alan T. Waterman, National Science Foundation; Victor F. Weisskopf, Massachusetts Institute of Technology; and John A. Wheeler, Princeton University.

### IUPAC

Approximately 200 young European chemists and chemical engineers from Marshall Plan countries will attend the World Chemical Conclave including the XVIth Conference of the International Union of Pure and Applied Chemistry in New York City, September 3–13, under the sponsorship of the Economic Cooperation Administration (ECA) and the Organization for European Economic Cooperation (OEEC). An additional 60 young chemists from Asia, Africa, South America, Australia, and New Zealand, as well as Europe, will attend by virtue of assistance provided by the Ford Foundation.

After the meetings in New York City, the young chemists aided by the ECA and Ford grants will spend three to four weeks visiting chemical factories and Government, university, and industrial laboratories in the United States. The American Chemical Society is arranging several different itineraries so that specialists in each branch of chemistry may participate in a program useful to them.

Both ECA and Ford projects will be supervised by a special advisory committee of the American Chemical Society, of which Professor Erwin Brand of Columbia University is chairman and Frank A. Howard, president of the board of trustees of the Sloan-Kettering Institute for Cancer Research, is vice-chairman. E. B. Peck on loan from the Standard Oil Development Company will be program director.

### SOUTH AMERICAN CONGRESS OF NEUROSURGERY

A. Earl Walker, Professor of Neurological Surgery at Johns Hopkins University School of Medicine, was the official delegate of the National Research Council at the IVth South American Congress of Neurosurgery held in Porto Alegre, Rio Grande do Sul, Brazil, May 6–12.

## INTERNATIONAL SCIENTIFIC MEETINGS, 1951

**July**

1 First International Congress of Analytical Chemistry, *Oxford*
6–10 Congress on Nuclear Physics, *Copenhagen*
11–14 International Union of Pure and Applied Physics, Seventh General Assembly, *Copenhagen*
14–21 International Welding Congress, *London* and *Oxford*
16–20 Second International Congress of Clinical Pathology, *London*
16–21 Thirteenth International Congress of Psychology, *Stockholm*
20–22 Fourth International Congress of the Sea, *Ostend*
23–29 Fourth International Congress of Blood Transfusion, *Lisbon*
24–28 International Congress of Applied Psychology, *Göteborg*

**August**

17–24 Ninth International Congress of Entomology, *Amsterdam*
21–Sept. 1 International Union of Geodesy and Geophysics, Ninth General Assembly, *Brussels*
22–Sept. 11 Eighth International Congress on Refrigeration, *London*

**September**

2–7 International Congress on Poliomyelitis, *Copenhagen*
8–9, 14–15 International Union of Pure and Applied Chemistry, Sixteenth Conference, *New York* and *Washington*
9–13 Twelfth International Congress of Pure and Applied Chemistry, *New York*
9–14 Second International Congress on Gerontology, *St. Louis*
9–14 Fifth World Congress of the International Society for the Welfare of Cripples, *Stockholm*
9–15 Tenth International Congress on Industrial Medicine, *Lisbon*
11–20 First Building Research Congress, *London*
14–16 International Federation for Documentation, General Conference, *Rome*
17–24 World Tobacco Congress, *Amsterdam*
19–20 World Medical Association, Fifth General Assembly, *Stockholm*
20–22 International Congress of Anesthesia, *Paris*
23–29 First Congress of the International Association of Allergists, *Zurich*
24–30 Fourteenth Congress of the International Society of Surgery, *Paris*
24–29 Ninth Congress of the International Association of Road Congresses, *Lisbon*

**October**

8–14 Pan American Highway Congress, *Lima*
15–19 World Metallurgical Congress, *Detroit*

**December**

1–8 Second Pan American Congress of Pharmacy, *Lima*
5–11, 16–18 International Statistical Institute, Twenty-Seventh Session, *New Delhi* and *Calcutta*
11–19 Fourth International Congress of the World Federation for Mental Health, *Mexico City*

## INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY

Isadore S. Ravdin, Chairman of the Committee on Surgery of the Division of Medical Sciences, NRC, has been appointed an official United States Government delegate to the XIIIth International Congress of Military Medicine and Pharmacy to be held in Paris, June 17–23. Dr. Ravdin is Professor of Surgery at the University of Pennsylvania Medical School and a member of the Armed Forces Medical Policy Council.

## INTERNATIONAL COMPUTATION CENTER

Herman Goldstine, Institute for Advanced Study, Princeton, N. J., represented the United States on the Committee of Experts on the International Computation Center which met in Paris, May 29–June 2. The meeting was called by UNESCO for the purpose of formulating plans for the proposed International Computation Center and for selecting a suitable location for its establishment.

## PACIFIC SCIENCE BOARD

The Pacific Science Board, NRC, announces the following appointments for field research in the Pacific area during 1951.

Under the program of Scientific Investigations in Micronesia, assisted by a grant from the Office of Naval Research, a six-man team will carry out ecological research at Onotoa, a coral atoll in the Southern Gilberts. Members of this team are Preston E. Cloud, Jr., U. S. Geological Survey (geologist); Ward H. Goodenough, University of Pennsylvania (anthropologist); Edwin T. Moul, Rutgers University (land ecologist); Albert H. Banner (marine biologist); Donald Strasburg (assistant in marine research), and John Randall (assistant in ichthyology), all of the University

of Hawaii. Transportation has been arranged through the cooperation of the U. S. Navy and the U. S. Coast Guard.

A continuation of the ecological studies at Arna in the Marshall Islands will be carried out by Harry Uyehara, University of Hawaii (cultural anthropology) and Leonard Horwitz, University of Minnesota (marine phycology). Mary Murai, associated with the University of Hawaii, will conduct a nutritional survey of the island of Udot in the Truk Archipelago.

The research program of the Invertebrate Consultants Committee for the Pacific, assisted by a grant from the Office of Naval Research, will include an insect survey of the Northern Marianas by Richard M. Bohart, University of California; an ecological study of the Giant African Snail on the island of Tinian by J. L. Chamberlin, Harvard University Museum of Comparative Zoology; an ecological study of the rhinoceros beetle in the Palaus by J. L. Gressit, Lingnan University; and a study of the transmission of insect diseases, with special reference to the rhinoceros beetle in the Palaus by Edward A. Steinhaus, University of California. Under this same program in cooperation with the Administration of the Trust Territory of the Pacific Islands and the Board of Forestry and Agriculture of Hawaii, N. L. H. Krauss will undertake a search for parasites and predators of the rhinoceros beetle and the Giant African Snail in East Africa.

The Board's program of Scientific Investigations in the Ryukyu Islands, supported by a grant from the Department of the Army, will include a botanical survey of Okinawa by Egbert H. Walker, U. S. National Museum, and an entomological survey of the same island by F. G. Werner, University of Vermont. In addition, four anthropologists have been selected for work in the Ryukyus starting in July. In the field of public health and medicine, R. W. Trotter of the Massachusetts General Hospital will conduct studies in eye diseases in the Ryukyus. Candidates are being sought for research assignments in the fields of parasitology and tuberculosis.

### INTERNATIONAL SOCIETY OF TROPICAL FORESTERS

The International Society of Tropical Foresters was formed at a meeting held in Washington, on December 14, 1950. The new organization will serve as a clearinghouse for information on developments in tropical forestry. Membership in the Society is open to foresters of all nationalities. Additional information may be obtained from Tom Gill, 1214 16th Street, N. W., Washington 6, D. C.

## *AFFILIATED SOCIETIES*

This Department of NEWS REPORT is reserved for announcement of annual meetings, research programs, and other activities of societies which are affiliated with the NRC.

### INDUSTRIAL RESEARCH INSTITUTE

The Industrial Research Institute, organized under the auspices of the National Research Council in 1938, held its annual meeting, May 14–16, in Washington. At the annual Award Dinner Randolph T. Major, Vice-President and Scientific Director of Merck & Co., Inc., was awarded the 1951 medal of the Institute in recognition of his skill in building an outstanding industrial research organization and his vision in guiding it to the timely solution of worthy problems in human health, nutrition, and welfare.

The Institute, composed of companies with research staffs totaling more than 25,000, represents all major fields of industry in the United States and has among its objectives the promotion of improved management of industrial research, the development of an understanding of research as a force in the life of the Nation, and the promotion of high standards in the field of industrial research.

## AMERICAN METEOROLOGICAL SOCIETY

National meetings of the American Meteorological Society scheduled for the remainder of this year will be held in Los Angeles, June 19–21; State College, Pennsylvania, August 7–9; and Minneapolis, October 9–11.

Several members of the American Meteorological Society recently participated in the Joint U. S. Senate Hearings on Weather Control. As a service to the meteorology profession the Society has made available copies of statements made at the hearings by H. G. Houghton, Massachusetts Institute of Technology; Wallace E. Howell, Blue Hill Observatory, Harvard University; Vincent J. Schaefer, General Electric Research Laboratory; W. F. McDonald, U. S. Weather Bureau; and other members of AMS before the Joint Senate Hearings regarding cloud modification and the artificial stimulation of rainfall. These statements may be obtained by addressing headquarters of the Society, 3 Joy Street, Boston 8, Mass.

## ASSOCIATION OF AMERICAN GEOGRAPHERS

The Council of the Association of American Geographers has approved the establishment of a temporary central office for the Association to be located in the Map Division of the Library of Congress. Arch Gerlach, Chief of the Map Division and editor of *The Professional Geographer,* will be in charge of this office.

The 48th Annual Meeting of the Association will be held in Washington on August 6 and 7, 1952, in conjunction with the XVIIth International Geographical Congress.

## AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

The Governing Board of the American Institute of Biological Sciences (AIBS) held its annual meeting in Washington, on May 14. Frank P. Cullinan was reelected Chairman and Wallace O. Fenn Vice-Chairman for the coming year.

Eleven biological societies will meet with the AIBS at the University of Minnesota, September 9–12, 1951.

## FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

The six societies of the Federation of American Societies for Experimental Biology held their annual scientific meetings in Cleveland, Ohio, April 30–May 4, with an attendance of more than 4700. A total of 1298 papers were presented in 126 sessions. The following presidents of societies were elected:

American Physiological Society—R. W. Gerard, University of Chicago.

American Society of Biological Chemists—Vincent du Vigneaud, Cornell University Medical College.

American Society for Pharmacology and Experimental Therapeutics—McKeen Cattell, Cornell University Medical College.

American Society for Experimental Pathology—Frieda S. Robscheit-Robbins, University of Rochester.

American Institute of Nutrition—Clive M. McCay, Cornell University.

American Association of Immunologists—Colin M. MacLeod, New York University College of Medicine.

D. B. Dill, Army Chemical Center, Md., Past-President of the American Physiological Society, will be Chairman of the Federation for the coming year.

## AMERICAN DENTAL ASSOCIATION

The 92nd Annual Meeting of the American Dental Association will be held in Washington, D. C., October 15–18. David J. Fitzgibbon, chairman of local arrangements, has announced that the Statler and Mayflower have been designated official hotels for the meeting.

## AMERICAN CHEMICAL SOCIETY

Analytical chemists will convene in Washington June 14–16 for the fourth annual Summer Analytical Symposium of the American Chemical Society. The importance of standardization to the steel, petroleum, and chemical industries and the latest methods of standardization in analytical chemistry will be discussed in a total of fourteen technical papers. New devices for standardization, from the omegatron to the microwave spectroscope, and national standards of length and mass will be demonstrated.

### AMERICAN GEOPHYSICAL UNION

The American Geophysical Union held its 32nd Annual Meeting at the National Academy of Sciences in Washington, April 30–May 2, with about 1,000 in attendance. Two general sessions were devoted to a Symposium on the Measurement of Geologic Time. Eight sectional meetings were held for presentation of papers on geodesy, seismology, meteorology, terrestrial magnetism and electricity, oceanography, volcanology, hydrology, and tectonophysics. Harald Ulrik Sverdrup, Director of the Norwegian Polar Institute in Oslo and formerly Director of the Scripps Institution of Oceanography of the University of California, was named the thirteenth recipient of the William Bowie Medal for outstanding contributions to the advancement of cooperative research in geophysics.

### SOCIETY FOR THE STUDY OF DEVELOPMENT AND GROWTH

The Tenth Symposium sponsored by the Society for the Study of Development and Growth will be held at Smith College, Northampton, Mass., August 30–September 3. The program will include papers on growth, differentiation, development, and genetics. Additional information on plans for the Symposium may be obtained from Richard H. Goodwin, Secretary of the Society, Connecticut College, New London, Conn.

### AMERICAN ACADEMY OF ARTS AND SCIENCES

At a regular meeting of the Academy held on April 11, the following papers on Development of the World's Resources were presented in a panel discussion under the chairmanship of Harlow Shapley, Harvard University: "Economics of Aid to Underdeveloped Areas" by Seymour E. Harris, Harvard University; "General Health Problem of the African Tropics" by Leonard Jan Bruce-Chwatt, British Colonial Medical Service; and "Underdeveloped Foods in Underdeveloped Countries" by Robert S. Harris, Massachusetts Institute of Technology. These papers were published in the May *Bulletin of the American Academy of Arts and Sciences.*

### AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

The annual meeting of the American Association of Petroleum Geologists was held jointly with the Society of Economic Paleontologists and Mineralogists and the Society of Exploration Geophysicists in St. Louis, April 23–26. The technical program included 100 papers on geology, paleontology, and geophysics, many of which will be published in the journals of the three societies. The next joint annual meeting is scheduled to be held in Los Angeles, March 24–27, 1952.

## *NEW PUBLICATIONS*

*Operations Research with Special Reference to Non-Military Applications.* National Research Council, 1951. 12 p.

*Outstanding Aerial Photographs in North America.* American Geological Institute Report No. 5. National Research Council, 1951. 88 p. $1.00.

*Recommended Nutrient Allowances for Beef Cattle.* Revised December 1950. National Research Council, 1951. 37 p. $0.50.

*Reflectors and Night Visibility.* Highway Research Board Bulletin No. 34. National Research Council, 1951. 54 p. $0.90.

*Second Conference on Radiation Cataracts, Under the Auspices of the National Research Council, Division of Medical Sciences, for the United States Atomic Energy Commission. Abstracts of Papers. December 8, 1950.* National Research Council, 1951. 30 p. Mimeographed.

*Summary Tables of Biological Tests.* National Research Council, 1951. Vol. 3, no. 1, 62 p.; Vol. 3, no. 2, 73 p.

*Use of Parking Meter Revenues.* Highway Research Board Bulletin No. 33. National Research Council, 1951. 28 p. $1.60.

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